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ENTOMOLOGY.

A NEW SPECIES OF CRAMBUS INJURING CORN ROOTS.—On the 7th of June, 1883, my assistant, Mr. Webster, who had been detailed to study the work of the black-headed grass maggot in corn fields, brought to the office some supposed cutworms, bristly reddish larvæ, which he had found gnawing the roots of corn below the surface, in fields in McLean county, on both old and new ground.

They were not seen again during this season, but on the 19th May of the present year I received the same species from Mr. E. Gastman, superintendent of public schools at Decatur, with the information that they had been sent him from Harristown by a farmer who reported that they were doing serious damage to the roots of his young corn.

On the 27th May, I visited Dwight for the purpose of searching the fields of Mr. Mills from which the web worm had been sent me. The corn in this field was injured most in patches. Over one area of about one-fourth of an acre, many hills were missing, and fully one-third of those remaining were damaged, with a plant occasionally killed. Upon digging into the affected hills the caterpillars were found just beneath the surface, sometimes as many as five or six in a hill, each in a retreat formed by loosely webbing together a mass of dirt irregularly cylindrical in shape, one and one-half to two inches long, and about one-half an inch in diameter. The worm was found in a silk-lined tube within this mass (the tube not always perfectly constructed), which in some cases opened at the surface, its presence being indicated by a circular opening about the size of wheat straw, in the earth next a stalk of corn.

The first attack upon the plant was made by gnawing the outer surface beneath the ground and above the roots. Occasionally the stalk was completely severed, as by a cutworm, but usually not, the larvæ showing rather a disposition to work upwards, eating a superficial furrow or burrowing lengthwise along the center of the stem. In other parts of the field, only here and there a stalk was attacked. The foliage was also frequently eaten, the lower leaf first and then the upper ones, the larva evidently leaving its burrow for this purpose. The tips of the leaves were eaten off, or irregular elongate holes were eaten through them—probably at night, as I have never seen the larva abroad by day. Where the corn was largest, webbed masses of dirt were frequently found which contained no larvæ, a fact which I was at first inclined to suppose indicated that the insect inhabiting them had transformed, especially as the larvæ found were of quite uniform size and apparently full grown. I failed to find a single pupa, however; and as our breeding experiments did not yield the insect for more than a month, it seems more likely that these empty webs had been abandoned by worms which had gone in search of younger stalks.

On the 7th June, after several hours of careful search in cornfields near Lexington, McKean county, where I selected by preference the least thrifty fields, I found no living larvæ, and but a single mass of webbed dirt at the base of a stalk precisely similar to those formed by the web worm, the hill containing it having been evidently damaged some time before.

A number of the larvæ were brought to the office and placed in earth in a breeding cage on the 28th May. On the 14th June those in the breeding cage were transferred to fresh corn. Many of them were dead, but nine active specimens remained. On the 30th the corn was renewed and another search was made. No larvæ were found and but two living pupæ. A single imperfect moth was released from the earth in which it had completed its transformations, but it was not able to expand its wings and could not be determined. One of the other pupæ was unfortunately crushed by accident, and the other was badly infested by mites which clung closely to its crust about the head with inserted beaks. These were carefully picked away, and this sole remaining pupa was returned to thoroughly calcined earth to complete its transformation. On the 22d July it emerged as a small gray moth, evidently belonging to the family Pyralidæ.

From Professor C. H. Fernald, to whom I referred the specimen, I learned that it was a species of Crambus, new to him and probably undescribed. It is described as *Crambus zeëllus* Fernald, and is known to inhabit Maine, Penna., W. Va., Illinois and Missouri. On the 3d July Mr. Mill, of Dwight, wrote me that the larvæ had almost entirely disappeared from the corn fields, and that the season had been so favorable to the crop that no perceptible damage had finally resulted, with the exception of the loss of a few hills here and there.

The small size of the individuals observed earliest in the season perhaps makes it possible that they came from the egg last spring; and the brood represented in our collections must have completed its development by the end of July. Whether a second brood appears is altogether uncertain.

The injuries inflicted occur so early as to permit replanting in most seasons in case they should prove to be of serious import; and this species is consequently to be classed with the cutworms so far as the effect of its injuries to corn are concerned.—*S. A. Forbes, from advanced sheets of Report of State Entomologist of Illinois for 1884.*

UNUSUAL ABUNDANCE OF GRASSHOPPERS IN COLORADO—Since the latter part of May Western newspapers have, from time to time, contained alarming reports of swarms of young locusts or grasshoppers in the valley of the Arkansas and in other portions of the State of Colorado, and the fear was expressed that Kansas, Nebraska and Missouri would be visited by an invasion of the Rocky Mountain locust (*Melanoplus spretus*). Under direction of Professor Riley, Mr. Lawrence Bruner has visited the portions of Colorado from which rumors came. His report has just been received, and is of such a nature as to allay all fears.

The principal reports were from Salida, Rico, Cañon City and Pueblo. During his sojourn in the State he visited all points along the line of the Denver and South Pass R. R., between Denver and Leadville, and from Leadville followed down the Arkansas river, stopping at Buenavista, Salida and Cañon City, and then going to Granite, Pine creek, Garros and Como. In every locality visited, from which grasshoppers were reported, it was found that the numbers had been greatly exaggerated, and in no case was the migratory species found. All reports arose from a rather undue abundance of native species, which are present every year, and most of which have their preferred food plants in the shape of wild growth and noxious weeds.

MIMICRY OF A DRAGON-FLY BY A SUMATRAN BUTTERFLY.—By the margin of a small stream I caught *Leptocircus virescens*, which derives protection from mimicing the habits and appearance of a dragon-fly, in a crowd of which it is often to be found. In form it reminded me of the European genus Nemoptera. It flits over the top of the water fluttering its tails, jerking up and down just as dragon-flies do when flicking the water with the tip of their abdomens. When it settles on the ground it is difficult to see, as it vibrates, in constant motion, its tail and wings, so that a mere haze, as it were, exists where it rests.—*Forbes' A Naturalist's Wanderings in Sumatra.*

EDIBLE MEXICAN INSECTS.—According to Mr. J. M. Carter, superintendent of the telegraph lines of the Mexican National R. R., to whom I was indebted for much kindness while in Mexico, the larva of an ant is eaten as food by the Otomite Indians; the ants living in oven-like hills.

Mr. Carter also told me that a caterpillar about two inches long, which lives within the thick leaves of the maguey or century plant, is eaten either raw or cooked by the Mexican Indians. It was not to be found in March at the time we were in Mexico, but in July, when it is often abundant. It is apparently a species of Noctuidæ.—*A. S. Packard.*

ENTOMOLOGICAL NEWS.—Among the more remarkable insects of Turkestan, reports H. Lansdell in *Nature* for May 21, is a wingless saw-fly, related to the Selandriæ. Affected by this absence of wings, the thorax undergoes important changes, and appears greatly swollen, and all the females generally have the appearance of little bags.——Among the Orthoptera of Turkestan are two species of locusts whose ravages have been complained of in the neighborhood of Perovsk, while a third kind called "pruss" have been destructive in the Zarafshan valley.——In the *Annales des Sciences Naturelles* for Dec., 1884 (received in July, 1885), M. Viallanes publishes an important paper on the optic ganglion of *Æschna maculatissima*, illustrated by three phototypic plates. He also is working at the nervous centers of the Orthoptera.——A Naturalist's Wanderings in the Eastern Archipelago, by Henry O. Forbes, contains many interesting notes regarding the insect life of Java, Sumatra and the Moluccas, as well as Timor.——It appears from the report of Professor Snow, entomologist of the State Board of Agriculture of Kansas, that the Hessian fly has greatly increased in that State, having appeared in fifty-seven of the eighty-one organized counties. This increase in area of distribution is to be accounted for from the fact that the species is two-brooded, and that the second or spring brood made its presence felt in many counties in which the first brood was not sufficiently numerous to attract attention. A new destructive insect is the web-worm, a pyralid caterpillar whose ravages have been thus far confined to Kansas, and has been injurious to corn and potatoes. It is said to occur in Texas, where it is known as the cotton-worm.

ZOÖLOGY.

THE SKELETON OF THE MARSIPOBRANCHI.—Mr. W. Parker contributes to the Transactions of the Royal Society, 1883, a study of the skeleton of the marsipobranchs. At the outset he states that the hag and Bdellostoma are a greatly modified and arrested sand lance or Ammocete, and that a larval frog is also a marsipobranch. He remarks: I feel satisfied that the Anura have only gradually become metamorphosed, and I doubt whether *all the larvæ of Pseudis* undergo that change, even now." The adult lamprey, like the tadpole, is truly suctorial, but the mouths of the Ammocete or larval lamprey, and of the Myxinoids, are not modified into a circular sucking ring, but remain as a small hooded opening fringed with short barbels.

All the cartilage of the hag fish is *cephalic*, for even the farthest rudiment of the dorsal part of the branchial basket is supplied by the vagus nerve, and the spinal region is only supported by membrane or fibrous tissue. No cartilaginous rudiments of vertebral arches can be found. Notwithstanding the ammocetine type of the Myxinoids, they come near to the lamprey in some particulars, and in the perfection of the cranial basket-work, the specialization of the respiratory pouches, the presence of a prenasal median cartilage, and the cartilaginous rings which encase the long tube opening to the olfactory sac, they go beyond it, as also in the development of the *lingual* suctorial apparatus. Professor Huxley and Mr. Parker agree